

# Aeronomy of Ice in the Mesosphere (AIM)

## Lessons Learned

Phase A, A+ and B/2

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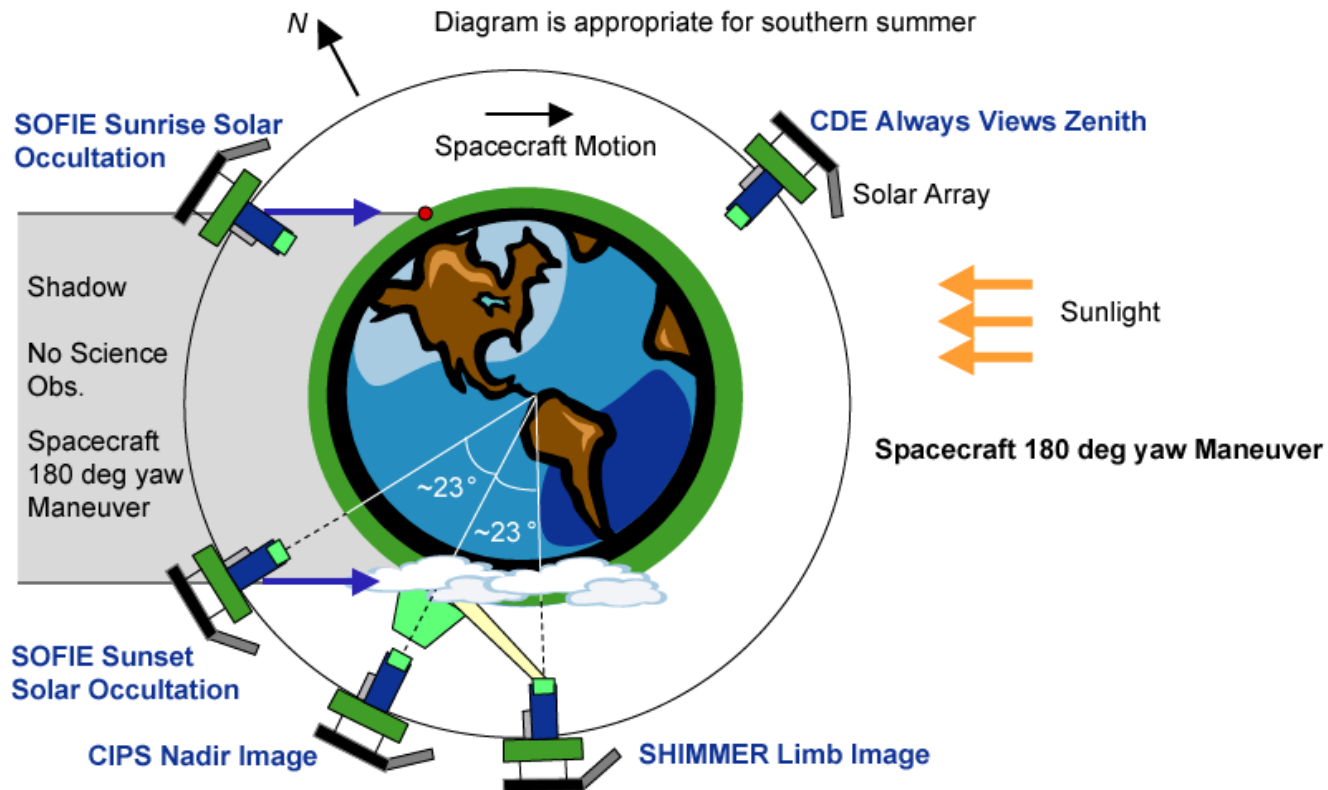
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# AIM Mission



The three atmospheric observing instruments each observe a common volume over a 12 minute period. SOFIE observes two locations per orbit, CIPS and SHIMMER observe the sunlit portion of the summer hemisphere. The spacecraft yaw maneuver is complete in time to ensure that SHIMMER observes 40 deg latitude and above.

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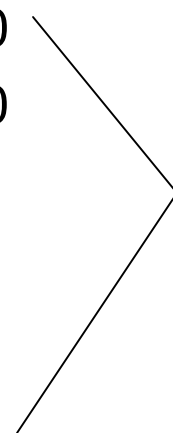
# AIM Organization

- Hampton University (HU) PI organization
  - James M. Russell III -- PI
  - Scott Bailey -- UAF -- Deputy PI
- LASP
  - PM, SE, MA, CIPS and CDE Instruments, I&T, MO
- Space Dynamics Laboratory (SDL) Logan, Ut
  - SOFIE
- Orbital Sciences Corporation (OSC)
  - Spacecraft
- GATS-Inc
  - Ground Data System

# Lessons Learned

- Phase A Funding and Schedule – Inadequate and Long
- Concept Study Report (CSR) -- Rethink
- The Explorer Review Process – Reviews add scope
- Cost Credibility and Sufficient Reserves Review: Right Idea, Difficult Timing
- Selection Debrief -- A Winner!

# Phase A Schedule and Funding

- Proposal Submission: 2/00
  - Downselect Announce: 9/00
  - Concept Studies Start: 5/01
  - Concept Studies End: 12/01
  - Site Visit: 4/02
  - Selection Debrief 8/02
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- \$450k
- AIM Experience: Strong Team
    - Descope and contractor change were traumatic
    - Suggestions: Expedite process, increase \$\$

# Revisit Concept Study Report Guidelines

- New Technology Development
  - AIM Experience: Identify and remove low TRLs
  - Suggestion: Take technology development out
    - Credit mitigation strategy to reduce risk
- Innovative Management Approaches
  - AIM Experience: Extensive GSFC Process In Place
    - AIM project stretched to address GSFC process
      - Cultural Differences may explain the Why?
  - Suggestion: Specify exact Explorer's management process in the form of a schedule, schedule deliverables and the form/structure of the deliverables

# Concept Study Report

- Significant Effort to Address all Topics
  - AIM Experience: Underutilized and unread
    - Key Document that we go back to
    - Insert a process for GSFC document review
  - Suggestions:
    - Tune the CSR to be the guiding document for the project
    - Revise Cost Exhibits
      - AIM Experience: Abandoned for the CCSRR
    - Build Context to Future Required Efforts
      - State % reserves (margin + contingency)

# Cost Credibility and Sufficient Reserves Review (CCSRR)

- Established by Code S as a Point of Cancellation
- AIM Experience:
  - Enabled difficult choices
    - Instrument Descope, Spacecraft Change
  - Incomplete HQ Definition on Review Criteria (% Reserves)
  - Overwhelming Workload. 9 more reviews to confirmation??
- Suggestions:
  - Issue: Creating Certainty with a Minimum of Information
  - Rebaseline Phase B if not part of CSR process
    - Enormous change in Phase B Scope of Work
  - If Adopted, rethink the CSR to Confirmation Process



# Independent Cost Assessments

- AIM has undergone four independent cost assessments, with a fifth in-process
  - Langley at selection, Price H, Aerospace Corp, SAIC
  - Awaiting GSFC-RAO results
  - What next?
- AIM Experience: Coordinating different input, and styles of input, was people intensive
  - Recommendation:
    - Standardize the data input process
    - Reassess TRL definitions

# Selection Debrief Provided a Clear Directive

- Significant Criticisms and Issues
  - Insufficient Margins
  - Descope an Instrument
  - Out of the cost cap by \$30M
  - Review in mid Phase B for Cost Credibility and Sufficient Reserves
  - Cancellation
- AIM Experience:
  - Catalyzed the team;
  - An event of significance: why don't you write it?